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## Data Sheet

### ***Cas9 Expressing MDA-MB-231 cell pool***

**Catalog #: 78069**

#### **Description**

Cas9 (*Streptococcus pyogenes* CRISPR associated protein 9) is an endonuclease enzyme that, when recruited to a specific DNA sequence by the sgRNA (single guide RNA), introduces a double stranded break into the DNA. This double stranded break is repaired in mammalian cells either through Non-Homologous End Joining or Homologous Recombination. Non-Homologous End Joining often results in the deletion or insertion of several base pairs at the cut site, which, when resulting in a frameshift, causes the functional inactivation of the targeted gene. Cas9 expressing MDA-MB-231 cells can be transduced or electroporated with sgRNA targeting a gene of interest to quickly generate knock-out cell pools or cell lines.

#### **Application**

1. Quickly generating knock-out cell pools or cell lines in MDA-MB-231 cells.
2. Implementing sgRNA screens in Cas9 expressing MDA-MB-231 cells.

#### **Format**

Each vial contains  $\sim 2 \times 10^6$  cells in 1 ml of FBS with 10% DMSO.

#### **Storage**

Immediately upon receipt, store in liquid nitrogen.

#### **Host Cell**

MDA-MB-231 is a human breast cancer cell line from a patient with metastatic mammary adenocarcinoma. Adherent epithelial cells.

#### **Culture Medium**

**Thaw Medium 12 (BPS Bioscience #78074):** DMEM medium (Hyclone #SH30243.01) supplemented with 10% FBS (Life technologies #26140-079), 1% Penicillin/Streptomycin (Hyclone #SV30010.01), and 1X MEM Non-essential Amino Acids (Gibco, #11140050).

**Growth Medium 12A (BPS Bioscience #78075):** Thaw Medium 12 (BPS Bioscience, #78074) plus 0.25  $\mu\text{g}/\text{mL}$  Puromycin (Invivogen, #ant-pr-1) to ensure recombinant expression.

#### **Recommended Culture conditions**

**Frozen Cells:** Prepare T-75 culture flask with 20 ml of pre-warmed Thaw Medium 12 (**no Puromycin**). Quickly thaw cells in a 37°C water bath with constant and slow agitation. After cleaning the outside of the vial with 70% ethanol, immediately transfer the entire content to Thaw Medium 12 (**no Puromycin**). Avoid pipetting up and down, and gently rock the flask to

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distribute the cells. Incubate the cells in a humidified 37°C incubator with 5% CO<sub>2</sub>. 24-48 hours after incubation, change to fresh Growth Medium 12A (**contains Puromycin**), without disturbing the attached cells. Continue to change medium every 2-3 days until cells reach desired confluency. If slow cell growth occurs during resuscitation, increase FBS to 15% for the first week of culture.

*Subculture:* When cells reached 90% confluency, remove the medium and wash twice with PBS (without Magnesium or Calcium). Treat cells with 2-3 ml of 0.25% Trypsin/EDTA and incubate for 2-3 minutes at 37°C. After confirming cell detachment by light microscopy, add 10 mL pre-warmed medium and gently pipette up and down to dissociate cell clumps. Transfer cells to a 15 ml conical tube and centrifuge at 200 x g for 5 minutes. Remove the medium and resuspend cells in 10 ml pre-warmed growth medium. Dispense 2 mL of the cell suspension into a new T75 flask containing pre-warmed 18 ml complete medium (a subcultivation ratio of 1:2 to 1:10 is recommended). Incubate cells in a humidified 37°C incubator with 5% CO<sub>2</sub>.

*Cryopreservation:* When cells reach 90% confluency, spin cells, and remove medium from the pellet. Resuspend the cells in freezing medium (10% DMSO in FBS). Freeze cells using a reduced rate freezing box (-0.5°C to -1°C per minute) down to -80°C, then move cells to liquid nitrogen for long term storage. Cells have been demonstrated to be stable for at least 15 passages; BPS recommends preparing frozen stocks so cells are not used beyond passage 20.

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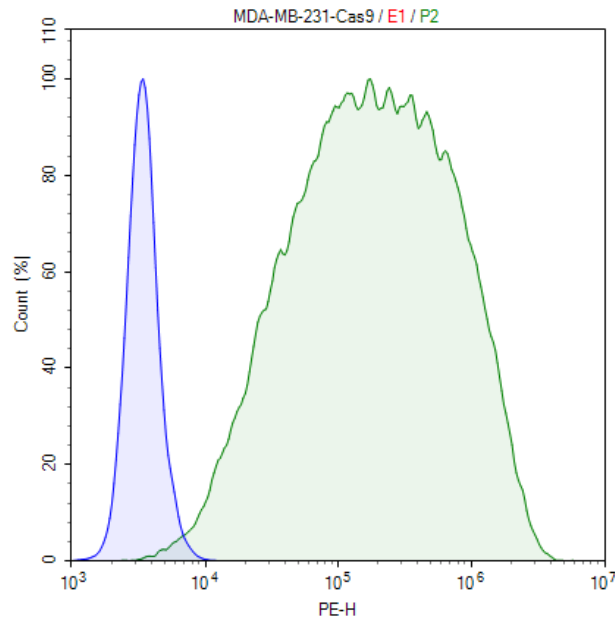
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### Validation

Expression of Cas9 was confirmed by flow cytometry.



### Figure 1. Expression of Cas9 in MDA-MB-231 cells.

Flow cytometry analysis of intracellular expression of Cas9 in MDA-MB-231 cells. Cells were stained with PE anti-FLAG antibody (BioLegend, #637309) and analyzed by FACS. Parental MDA-MB-231 cells are shown in blue, and the Cas9-expressing MDA-MB-231 cells are shown in green.

### Mycoplasma Testing

This cell line has been screened using the MycoAlert™ Mycoplasma Detection Kit (Lonza, #LT07-118) to confirm the absence of Mycoplasma contamination. MycoAlert Assay Control Set (Lonza, #LT07-518) was used as a positive control.

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### Vector and Sequence

*Streptococcus pyogenes* Cas9, including a C-terminal FLAG tag, was transduced via lentivirus (BPS Bioscience, #78066).

MDKKYSIGLDIGTNSVGWAVITDEYKVPSSKFKVLGNTDRHSIKKNLIGALLFDSGETAEATRLK  
RTARRRYTRRKNRICYLQEIFSNEMAKVDDSSFFHRLEESFLVEEDKKHERHPHFGNIVDEVAYH  
EKYPTIYHLRKKLV DSTDKADLRLIYLALAHMIKFRGHFLIEGDLNPDNSDVKLFIQLVQTYNQL  
FEENPINASGVDAKAILSARLSKSRLENLIAQLPGEKKNLFGNLIASLGLTPNFKSNFDLAED  
AKLQLSKD TYDDDLDNLLAQIGDQYADLFLAAKNLSDAILLSDILRVNTEITKAPLSASMIKRYDE  
HHQDLTLLKALVRQQLPKEYKEIFFDQSKNGYAGYIDGGASQEEFYKFIKPILEKMDGTEELLVK  
LNREDLLRKQRTFDNGSIPHQIHLGELHAILRRQEDFYFPFLKDNREKIEKILTRIPYYVGPLARG  
NSRFAWMTRKSEETITPWNFEEVVDK GASAQSFIERMTNFDKNLPNEKVL PKHSLLYEYFTVY  
NELTKVKYVTEGMRKPAFLS GEQKKAIVDLLFKTNRKVTVKQLKEDYFKKIECFDSVEISGVEDR  
FNASLGTYHDLLKIIKDKDFLDNEENEDILEDIVLTLTLFEDREMIEERLKYAHLFDDKVMKQLK  
RRRYTGWGRLSRK LINGIRDKQSGKTILDFLKSDGFANRNF MQLIHDDSLTFKEDIQKAQVSGQ  
GDSLHEHIANLAGSPA IKGILQTVKVVDELVKVMGRHKPENIVIAMARENQTTQKGQKNSRER  
MKRIEEGIKELGSQILKEHPVENTQLQNEKLYLYLQNGRDMYVDQELDINRLSDYDVDHIVPQ  
SFLKDDSIDNKVLRSDKNR GKSDNVPSEEVVKMKNYWRQLLNAKLITQRKFDNLTKAERGG  
LSELDKAGFIKRQLVETRQITKHVAQILDSRMNTKYDENDKLIREVKVITL KSKLVSDFRKDFQFY  
KVREINNYHHAHDAYLNAVVG TALIKKYPKLESEFVYGDYKVYDVRKMIAKSEQEIGKATAKYFF  
YSNIMNFFKTEITLANGEIRKRPLIETNGETGEIVWDKGRDFATVRKVLSMPQVNVKKTEVQTG  
GFSKESILPKRNSDKLIARKKDWDPKKYGGFDSPTVAYSVLVAKVEKGKSKLKS VKELLGITI  
MERSSF EKNPIDFLEAKGYKEVKKDLIIKLPKYSLFELENGRKRMLASAGELQKGNELALPSKYV  
NFLYLASHYEKLGSPEDNEQKQLFVEQHKHYLDEII EQISEFSKR VILADANLDKVL SAYNKHR  
DKPIREQAENIIHLFTLTNLGAPAAFKYFDTTIDRKRYTSTKEVLDATLIHQ SITGLYETRIDLSQLG  
GDKRPAATKKAGQAKKKKDYKDDDDK

### Related Products

<u>Product</u>	<u>Cat. #</u>	<u>Size</u>
Cas9 Expressing Jurkat cells	78070	2 vials
Cas9 Expressing Raji cells	78071	2 vials
Cas9 Expressing A549 cells	78072	2 vials
Cas9 Expressing HCT116 cells	78073	2 vials
Cas9 Lentivirus (puromycin selection)	78066	500 µl x 2
Cas9, His-tag ( <i>S. pyogenes</i> )	100206-1	50 µg

### Notes

*The CRISPR/CAS9 technology is covered under numerous patents, including U.S. Patent Nos. 8,697,359 and 8,771,945, as well as corresponding foreign patents applications, and patent rights.*

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